

**DESCRIPTION OF REQUIREMENTS UNDER
10 CFR PART 74**

AS COVERED BY OMB CLEARANCE 3150-0123

The recordkeeping and reporting requirements in the indicated sections of 10 CFR Part 74 provide timely detection and enhanced localization of anomalies that could be potentially indicative of a theft or diversion of strategic special nuclear material (SSNM) and special nuclear material (SNM). Specific requirements for reports and records in Part 74 are as follows:

Section 74.11 requires that each licensee who possesses one gram or more of contained uranium-235, uranium-233, or plutonium and each licensee who operates a uranium enrichment facility notify the NRC Operations Center within one hour of discovery of any loss, other than normal operating loss, or theft or other unlawful diversion of special nuclear material, or any incident in which an attempt has been made or is believed to have been made to commit a theft or unlawful diversion of such material, or any unauthorized production of enriched uranium. The information is used by the NRC staff to determine whether there has been a diversion or loss of material or any unauthorized production of enriched uranium and to initiate prompt action to recover the material or stop the unauthorized production in order to protect public health and safety. The NRC staff will respond according to the significance of the event. Response to a significant event is usually made by the regional staff and Headquarters staff within 24 hours.

Section 74.13(a) requires that each licensee authorized to possess SNM at any one time and location in a quantity totaling more than 350 grams of contained uranium-235, uranium-233, or plutonium, to submit DOE/NRC Form 742. This submission frequency coincides with a licensee's physical inventory. Therefore, Category III facilities file annually, Category II facilities file every 9 months, and Category I facilities file semiannually. These reports summarize the quantities of SNM received, produced, possessed, transferred, consumed, disposed of, or lost by the licensee. DOE/NRC Form 742C, which reflects the composition of the ending inventory, is also submitted. The information is required in order for the United States to fulfill its responsibilities as a participant in the US/IAEA Safeguards Agreement and to satisfy bilateral agreements, e.g., with Australia and Canada, and to fulfill its domestic safeguards responsibilities. These forms are submitted in computer readable format and have been previously cleared under the following OMB clearances:

DOE/NRC Form 742	OMB No. 3150-0004
DOE/NRC Form 742C	OMB No. 3150-0058

The licensee reports are sent to a DOE contractor facility for recording in an SNM tracking system. NRC staff review these reports. Discrepancies between the reports and licensees' records are investigated and reconciled.

Since 1994, NRC has required submission of these forms in computer readable form. This change has eliminated the need for hard copy forms, thus reducing the burden on the NRC and licensees.

Section 74.13(b) requires that each licensee subject to the requirements of Section 75.35, who is required to submit routine Material Status Reports pertaining to implementation of the US/IAEA Safeguards Agreement, shall prepare and submit those reports only as provided in Section 75.35.

Section 74.15(a) requires that each licensee who transfers and each licensee who receives special nuclear material to complete and distribute a Nuclear Material Transaction Report on DOE/NRC Form 741. This should be done in accordance with the printed instructions for completing the form whenever the licensee transfers or receives a quantity of SNM of one gram or more of contained uranium-235, uranium-233, or plutonium. DOE/NRC Form 741 has previously been approved under OMB Clearance Number 3150-0003, which should be referred to for further supporting information and burden data. Submission of this data on computer readable DOE/NRC Form 741 has eliminated the need for hard copy forms, thus reducing the burden on the NRC and licensees.

Prior to a site visit, the NRC inspection staff obtains a computer printout of nuclear material transactions from the DOE/NRC database. The inspectors review licensee records with the printout data to assure agreement between the record and the report and to assure that shipper-receiver differences have been reconciled.

Section 74.15(b) requires that each licensee who receives one gram or more of contained uranium-235, uranium-233, or plutonium from a foreign source shall complete in computer-readable format both the supplier's and receiver's portion of the Nuclear Material Transaction Report (DOE/NRC Form 741); perform independent tests to assure the accurate identification and measurement of the material received, including its weight and enrichment; and indicate the results of these tests on the receiver's portion of the form.

Section 74.15(c) requires that any licensee who is required to submit inventory change reports pursuant to Section 75.34 of this chapter (pertaining to implementation of the US/International Atomic Energy Agency (IAEA) Safeguards Agreement) shall prepare and submit those reports only as provided in that section (instead of as provided in paragraphs (a) and (b) of this section).

Section 74.17(a) requires that each licensee subject to the requirements of Sections 74.31 or 74.33 must submit a completed Special Nuclear Material Summary Report on NRC Form 327 not later than 60 calendar days from the start of each physical inventory required by Section 74.31(c)(5) or Section 74.33(c)(4). The report should be submitted to the Director, Office of Nuclear Material Safety and Safeguards.

Section 74.17(b) requires each licensee who is subject to the requirements of Section 74.41(a) to submit a completed Special Nuclear Material Physical Inventory Summary Report on NRC Form 327 not later than 60 calendar days from the start of each physical inventory required by Section 74.43(c)(7). The licensee must report the inventory results by plant and total facility to the Director, Office of Nuclear Material Safety and Safeguards.

Section 74.17(c) requires that each licensee subject to the requirements of Section 74.51 shall submit a completed Special Nuclear Material Physical Inventory Summary Report on NRC Form 327 not later than 45 calendar days from the start of each physical inventory required by Section 74.59(f). The licensee must report the physical inventory results by plant and total facility to the Director, Office of Nuclear Material Safety and Safeguards.

The reporting period for Section 74.17 corresponds to the required inventory frequency. Special nuclear material is required to be controlled and accounted for because of the government's national security obligation to prevent or detect loss, diversion or theft, or the appearance thereof, of quantities of SNM that could be used for clandestine nuclear devices. To meet this obligation, NRC's safeguards material control and accounting regulations for fuel facilities require the conduct of physical inventories of SNM on a periodic basis by licensees. Section

74.17 requires the reporting of physical inventory results on NRC Form 327 each time a physical inventory is conducted by a major fuel facility. NRC Form 327 is approved under OMB clearance number 3150-0139.

Section 74.19(a) exempts licensees subject to the requirements of Sections 74.31, 74.33, 74.43, or 74.59 from the requirements of paragraphs (a)(1) through (a)(4) of this section. Otherwise:

(a)(1) Each licensee shall keep records showing the receipt, inventory, acquisition, transfer, and disposal of all special nuclear material in its possession regardless of its origin or method of acquisition.

(a)(2) Each record required by the regulations in this chapter or by license condition must be maintained and retained for the period specified by the appropriate regulation or license condition, or if not specified by the appropriate regulation or license condition, the licensee must retain the record until the Commission terminates the license that authorizes the activity that is subject to the recordkeeping requirement.

(a)(3) Each record of receipt, acquisition, or physical inventory of special nuclear material that must be maintained pursuant to paragraph (a)(1) of this section must be retained as long as the licensee retains possession of the material and for 3 years following transfer or disposal of the material.

(a)(4) Each record of transfer of special nuclear material to other persons must be retained by the licensee who transferred the material until the Commission terminates the license authorizing the licensee's possession of the material.

The activities in this section are reviewed by NRC inspectors to detect diversion of special nuclear material and to implement prompt action in the event of a diversion.

Section 74.19(b) requires that each licensee that is authorized to possess special nuclear material in a quantity exceeding one effective kilogram at any one time shall establish, maintain, and follow written material control and accounting procedures that are sufficient to enable the licensee to account for the special nuclear material in its possession under license. The procedures will be reviewed by the NRC licensing and inspection staff in order to determine whether the procedures are adequate to prevent diversion of the nuclear material and to implement prompt action in the event of a diversion. The licensee shall retain these procedures until the Commission terminates the license that authorizes possession of the material and retain any superseded portion of the procedures for 3 years after the portion is superseded.

Section 74.19(c) requires that licensees other than those subject to Sections 74.31, 74.33, 74.41, or 74.51 authorized to possess special nuclear material at any one time and site location in a quantity greater than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, shall conduct a physical inventory of all special nuclear material in its possession under license at intervals not to exceed 12 months. The results of the physical inventories need not be reported to the Commission, but the licensee must retain the records associated with each physical inventory until the Commission terminates the license that authorized the possession of special nuclear material. The information is used by the licensee and the NRC staff to detect diversion of the special nuclear material and to initiate prompt action in the event of a diversion.

Section 74.19(d) states that records that are maintained pursuant to this part may be the original or a reproduced copy or a microform if the reproduced copy or microform is duly authenticated by authorized personnel and the microform is capable of producing a clear and legible copy after storage for the period specified by Commission regulations. The records also may be stored in electronic media which has the capability of producing a legible, accurate, and complete record during the required retention period. Records such as letters, drawings, or specifications must include all pertinent information such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with, and loss of, records.

Subpart C Sections 74.31-74.33: Special Nuclear Material of Low Strategic Significance

Section 74.31 contains the following requirements for licensees that possess and use SNM of low strategic significance:

Section 74.31(a) requires that licensees authorized to possess and use more than one effective kilogram of special nuclear material of low strategic significance, other than a production or utilization facility licensed pursuant to Part 50 or 70 of this chapter, or operations involved in waste disposal, must implement and maintain an NRC-approved MC&A system that will confirm the presence of SNM at the licensee facility, resolve indications of potentially missing material, and aid in investigation and recovery of material that is determined to be actually missing.

Section 74.31(b) requires each applicant for a license, and each licensee that, upon application for modification of its license, would become newly subject to the performance objectives of paragraph (a) of this section, shall submit a fundamental nuclear material control (FNMC) plan describing how the requirements of Section 74.31(c) will be met. The plan must be implemented when a license is issued or modified to authorize the activities being addressed in Section 74.31(a), or by the date specified in a license condition. The objectives of the plan are to confirm the presence of special nuclear materials at the licensee facility, resolve indications of potentially missing material, and aid in investigation and recovery of material that is determined to be actually missing.

Section 74.31(c) describes the system capabilities that must be addressed in the plan in order to meet the general performance objectives of Section 74.31(a). Guidance for preparing the plan is provided in the Acceptance Criteria document (NUREG-1065). The plan is reviewed by the NRC staff to determine whether the performance criteria have been satisfied. Initial NRC response to the plan is usually sent to the licensee within 60 days of receipt and docketing. The approved plan will be used by the appropriate NRC staff to monitor actual licensee performance in reaching the performance objectives.

Section 74.31(d) requires each licensee to establish records that will demonstrate that the requirements of 74.31(c) have been met and to maintain those records for three years, unless a longer retention time is required by Part 75 of this chapter. The records to be maintained are selected by the licensee. The 3-year retention period is the shortest time span which assures the NRC that all data is available for inspection. Only new licensees and those modifying their license such that they are subject to the requirements of Section 74.31(a) will be required to submit an FNMC Plan.

Section 74.33(a) requires that each licensee authorized to possess equipment capable of enriching uranium or authorized to operate an enrichment facility and produce, possess, or use more than one effective kilogram of special nuclear material at any site or contiguous sites

subject to control by the licensee, establish, and submit for NRC approval, an MC&A system that will maintain current knowledge of source, material, and special nuclear material, prevent and detect the production of uranium enriched to 10 percent or more uranium-235, prevent and detect undeclared production of enriched uranium of low strategic significance, resolve any indications of missing uranium, resolve indications of production of uranium enriched to 10 percent or more uranium-235, and resolve indications of undeclared production of uranium of low strategic significance. The licensee must also provide information to aid in the investigation of missing uranium and the production of enriched uranium of 10 percent or greater enrichment of uranium-235, and the undeclared production of SNM of low strategic significance. This information is used by the licensee to keep track of how much uranium is processed and its location, to prevent the illicit production of higher than authorized enrichment of uranium which could include weapons-grade material, and to protect against the unauthorized production of enriched uranium of low strategic significance. These objectives are designed to protect the health and safety of the public against possible diversion of material for illicit purposes.

Guidance for preparing the plan is provided in the Acceptance Criteria document (NUREG/CR-5734).

Section 74.33(b) requires that no later than two years prior to uranium enrichment facility startup, a “Fundamental Nuclear Material Control Plan” (FNMC) must be submitted to NRC describing how the performance objectives of Section 74.33(a) and the system features and capabilities of Section 74.33(c), and the recordkeeping requirements of Section 74.33(d) will be met.

Section 74.33(c) describes the system capabilities that must be addressed in the plan in order to meet the general performance objectives of Section 74.33(a). The licensee must have a physical inventory program that ensures accurate, current, and reliable knowledge of source material and SNM. Such a program is maintained by performing a dynamic (non-shutdown) physical inventory at specified intervals, and by adjusting the book inventory to the physical inventory and resolving, or reporting within 60 days the inability to resolve, any inventory difference exceeding a quantity set by the NRC. The licensee must also have a detection program that will provide a high assurance of detection of unauthorized production of enriched uranium of low strategic significance or uranium enriched to 10 percent or more, an item control program that provides knowledge of the identify and location of source material items kept for 14 days or more in inventory to deter and detect any loss or theft of 500 grams or more of uranium-235, a resolution program for shipper-receiver differences that will resolve any statistically significant differences in excess of 500 grams uranium-235, and an assessment program that independently reviews and documents the effectiveness of the MC&A program at least every 24 months.

Section 74.33(d) requires that each licensee establish records that will demonstrate that the requirements of Sections 74.33(a) and (c) have been met and to maintain those records for three years, unless a longer retention time is required by Part 75 of this chapter. The records are needed for inspection by NRC to ascertain the continued effectiveness of the MC&A system.

Subpart D Sections 74.41-74.45: Special Nuclear Material of Moderate Strategic Significance.

Section 74.41(a) requires that licensees authorized to possess and use more than one effective kilogram of special nuclear material of low strategic significance, other than as sealed sources and to use such material at any site, other than a production or utilization facility licensed

pursuant to Part 50 or 70, an irradiated fuel reprocessing plant, or an operation involved in waste disposal, to establish, implement and maintain an NRC-approved material control and accounting system that will confirm the presence of special nuclear material at the licensee facility, resolve any indications of potentially missing material, and aid in investigation and recovery of material that is determined to be actually missing.

Section 74.41(b) establishes a time requirement for the submission and implementation of FNMC plans for licensees authorized to possess and use special nuclear material of moderate significance. This is a one-time submittal. There are no currently affected licensees and none anticipated in the next several years to submit a new FNMC Plan. The submittal would be required, however, for any new facility that were to come on line in the future. Changes to the FNMC Plan can be through license amendments (licensing process). The plan is reviewed by the NRC staff to determine whether the performance criteria have been satisfied. Initial NRC response to the plans is usually sent to the licensee within 60 days of receipt and docketing. The approved plan will be used by the appropriate NRC staff to monitor actual licensee performance in reaching the performance objectives.

Section 74.41(c) describes the system capabilities that must be addressed in the FNMC Plan in order to be the general performance objectives of Section 74.41(a). It must include the capabilities described in Sections 74.43 and 74.45 and must incorporate sufficient checks and balances to ensure that falsification of data which conceals diversion of SNM by a single individual or collusion between two individuals could be detected. The approved plan will be used by the appropriate NRC staff to monitor licensee performance in reaching the performance objectives.

Section 74.43(a) requires licensees subject to Section 74.41 to maintain internal control, inventory, and recordkeeping capabilities imposed by paragraphs (b), (c), and (d) of this section.

Section 74.43(b) requires each licensee to establish and maintain a management structure, policies, and written procedures; provide for personnel training and qualification; establish and maintain an item control program and to conduct and document shipper-receiver differences; and perform independent assessments of the total MC&A system every 18 months. The burden for maintenance of these procedures is captured by Section 74.43(d).

Section 74.43(c) requires each licensee to perform a physical inventory every nine months and perform inventory difference/standard error of inventory difference (ID/SEID) calculations, and ID/SEID investigations. Licensees must investigate and report the failure to resolve any excessive inventory differences. The report is used to alert the NRC staff to a potential "out of control situation" at a licensee site. If the size of the inventory difference is significant, an inspector from the NRC Headquarters usually visits the site to oversee and review the resolution of the inventory difference and the corrective action to be taken. Each licensee must reconcile and adjust the plant and book records to the results of physical inventory. Each licensee is required to maintain and follow procedures for tamper-safing, for confirming the validity of prior measurements associated with unencapsulated and unsealed items on ending inventory, and for the physical inventory. The maintenance of these procedures is captured under Section 74.43(d). Each licensee is also required to provide unique identification for each item on inventory and to document all transfers between internal control areas.

Section 74.43(d) requires licensees to maintain records of the receipt, shipment, disposal, inventory, SNM added to and removed from process, and shipper-receiver evaluations. Records pertaining to receipt and disposal of SNM are to be retained until the license is

terminated. Each licensee is required to establish auditable records sufficient to demonstrate the performance requirements of Sections 74.41, 74.43, and 74.45 have been met and maintain these records for at least three years. The MC&A procedures are required to be kept until the license is terminated and superseded portions must be retained for 3 years after the portion is superseded. Unless otherwise stated, records are maintained for 3 years.

The records in this section are needed for inspection by NRC to ascertain the continued effectiveness of the MC&A system.

Sections 74.45(a) and (b) require each licensee subject to Section 74.41 to establish, maintain, and implement a program for the measurement of all special nuclear material (with specified exemptions) received, produced, transferred between internal control areas, on inventory, or shipped, discarded, or otherwise removed from inventory. Each licensee would be required to develop and use written procedures for preparing, acquiring, maintaining, storing, and using reference standards; calibrating measurement systems and conducting measurements; and recording, reviewing and reporting measurements. The burden for maintenance of these procedures is captured under Section 74.43(d). These records are needed for inspection by NRC to ascertain the continued effectiveness of the MC&A system.

Section 74.45(c) requires each licensee to maintain measurement quality and to estimate measurement uncertainty values. Each licensee is to establish and maintain a measurement control program so that the SEID is less than 0.125 percent of the active inventory, generate data on the performance of each measurement system utilized, conduct control measurements to provide data for the determination of random error behavior, evaluate all measurement system data to determine significant contributors to the measurement uncertainties associated with inventory difference and shipper-receiver differences, and establish and maintain a statistical control system designed to monitor the quality of each measurement device or system. Each license must promptly investigate and take corrective action whenever a control datum exceeds certain limits. Each licensee must assign responsibility for the measurement program and ensure that any contractor conforms with the applicable requirements.

Subpart E Sections 74.51-74.59: Formula Quantities of Strategic Special Nuclear Material

Section 74.51(a) requires that licensees authorized to possess and use five or more formula kilograms of SSNM establish, implement, and maintain a Commission-approved MC&A system that meets specified objectives.

Section 74.51(c) requires that licensees authorized to possess and use five or more formula kilograms of SSNM submit a FNMC plan that describes how the licensee intends to comply with Section 74.51(b) in order to achieve the general performance objectives of Section 74.51(a). Guidance for preparing the plan is provided in the Standard Format and Content Acceptance Criteria document (NUREG-1280). Review of the FNMC plan enables the NRC to make a judgment on each licensee's capabilities to meet regulatory requirements. After approval, the plans are used by NRC inspectors to monitor licensee performance. This was a one-time submittal. All currently affected licensees have submitted the required plans. Future changes can be made through license amendments (licensing process). After approval, the plans are used by NRC inspectors to monitor licensee performance. Only new licensees and those modifying their licensee such that they are subject to the requirements of Section 74.51(a) are required to submit an FNMC plan.

Section 74.57(c) requires that a licensee notify NRC immediately any time the licensee is unable to resolve a loss detection alarm within the time limit specified in its FNMC plan. In the case of a five formula kilogram loss, the maximum time for resolution is 24 hours. The early notification puts the NRC on alert to a potential loss of SSNM and thus allows for contingency planning in the event a diversion or theft is indicated. NRC, and possibly other federal agency, involvement at an early stage will enhance the likelihood of material recovery.

Section 74.57(d) requires that once an anomaly has been resolved, records must be updated and corrected to enable the licensee to maintain continuing compliance with detection and response requirements and permit NRC inspectors to evaluate adequacy of the licensee's resolution procedures. A key factor in the resolution of alarms is the availability of auditable records that provide a history of the processing and storage of SSNM in bulk and item form. The majority of occurrences which cause false alarms are expected to be identifiable from a review of pertinent records. The involved records will have been generated in the process of complying with the requirements of Sections 74.53, 74.55, or 74.59.

Section 74.57(f)(2) requires that licensees notify NRC within 24 hours if an abrupt loss detection estimate exceeds five formula kilograms of SSNM. The early notification puts the NRC on alert to a potential loss of SSNM and thus allows for contingency planning in the event a diversion or theft is indicated. NRC, and possibly other federal agency, involvement at an early stage will enhance the likelihood of material recovery.

Section 74.59(b) requires that high enriched uranium licensees establish and maintain management structure, policies and procedures.

Section 74.59(c) requires that licensees provide for personnel training and qualification.

Section 74.59(d) requires that licensees establish and maintain a system of measurements for material control and accounting.

Section 74.59(e) requires that licensees establish and maintain a system of measurement quality control, perform statistical analyses and process and engineering tests, and generate data on the performance of measurement processes.

Section 74.59(f) requires that licensees perform a physical inventory every six months and perform inventory difference/standard error of inventory difference (ID/SEID) calculations, and ID/SEID investigations. Licensees must investigate and report the failure to resolve any excessive inventory difference. They must reconcile and adjust the plant and subsidiary book records to the results of the physical inventory. Licensees must maintain records and procedures to ensure the quality of physical inventories.

Section 74.59(g) stipulates that licensees shall establish auditable records sufficient to demonstrate that the requirements of Sections 74.53, 74.55, 74.57, and 74.59 have been met and retain those records for at least three years.

Section 74.59(h) requires that licensees establish procedures for shipper-receiver difference evaluations and investigations, and establish a scrap control program.

Information recorded and reported in accordance with the requirements in this subpart will enable NRC inspectors and licensing personnel to assess licensees' ongoing capabilities to control and account for SSNM in their possession. As indicated previously, these records and

reports will be invaluable to the licensees and the NRC in the event of an attempted diversion or theft since they will permit localization of losses in space and time.